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Indian Standard

SPECIFICATION FOR METAL CHAIRS FOR OFFICE PURPOSES

PART 1 NON-REVOLVING AND NON-TILTING

(*Second Revision*)

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SPECIFICATION FOR METAL CHAIRS FOR OFFICE PURPOSES

PART 1 NON-REVOLVING AND NON-TILTING

(Second Revision)

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Indian Standard

SPECIFICATION FOR METAL CHAIRS FOR OFFICE PURPOSES

PART 1 NON-REVOLVING AND NON-TILTING

(Second Revision)

0. FOREWORD

0.1 This Indian Standard (Part 1) (Second Revision) was adopted by the Indian Standards Institution on 25 January 1985, after the draft finalized by the Furniture Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 This standard was published in 1966 and subsequently revised in 1974. In this revision besides incorporating an amendment, the grades of the materials to be used in components have been specified. Fabrication of seat and backrest have been included and provision for having padded armrest has also been made.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard (Part 1) covers requirements of materials, construction and finish of *non-revolving* and *non-tilting metal* chairs for office purposes.

2. MATERIALS

2.1 Aluminium sheets shall conform to alloy designation NS3, NS4 or 315C0 in ½ H conditions of IS : 737-1974†.

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*Rules for rounding off numerical values (*revised*).

†Specification for wrought aluminium and aluminium alloys, sheet and strip (for general engineering purposes) (*second revision*).

2.2 Electrodes — Electrodes for gas, arc and spot welding shall conform to IS : 1278-1972[*], IS : 814 (Part 2)-1974[†] and IS : 4972-1968[‡] respectively.

2.3 French Polish — French polish shall conform to IS : 348-1968[§].

2.4 Wax Polish — Wax polish shall conform to IS : 8542-1977[||].

2.5 Mild Steel Sheets — Mild steel sheets shall conform to grade 0 of IS : 513-1973[¶] or grade 0 of IS : 1079-1973[**].

2.6 Mild Steel Tubes — Mild steel tubes shall conform to ERW quality of IS : 1161-1979[††].

2.7 Aluminium Tubes — Aluminium tubes shall conform to IS Designation HV 20 WP of IS : 1285-1975[‡‡]. Aluminium tubes with the following properties may also be used:

Mechanical Properties

Tensile strength (*Min*)	26 kgf/mm^2
Elongation (*Min*) on 50 mm gauge length	16 percent

2.8 Screws — Screws shall conform to IS : 1365-1978[§§].

2.9 Wood — The wood suitable for furniture as specified in IS : 399-1963[||||] shall be used.

3. DIMENSIONS

3.1 The dimensions of metal chairs shall conform to IS : 3663-1981[¶¶].

4. TYPES

4.1 Different types of metal chairs shall be classified as given below:

a) Chairs with and without arms, and

b) Chairs with different types of seats and backs.

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[*] Specification for filler rods for gas welding (*second revision*).

[†] Specification for covered electrodes for metal arc welding for structural steel: Part 2 For welding sheets (*fourth revision*).

[‡] Specification for resistance spot-welding electrodes.

[§] Specification for French polish (*second revision*).

[||] Specification for polish for wooden furniture, paste.

[¶] Specification for cold rolled carbon steel sheets (*second revision*).

[**] Specification for hot rolled carbon steel sheet and strip (*third revision*).

[††] Specification for steel tubes for structural purposes (*third revision*).

[‡‡] Specification for wrought aluminium and aluminium alloy, extruded round tube and hollow sections (for general engineering purposes) (*second revision*).

[§§] Specification for slotted countersunk head screws (*third revision*).

[||||] Classification of commercial timbers and their zonal distribution (*revised*).

[¶¶] Specification for dimensions for tables and chairs for general office purposes (*first revision*).

5. FABRICATION

5.0 Components — Metal chairs shall be assembled from the components given in **5.1** to **5.3**.

5.1 Tubular Frame

5.1.1 *Aluminium Tubular Frame* — The aluminium tubular frame shall be made from tubular pipes with a wall thickness not less than 1·60 mm. The tubular pipe shall be either round or square in section. The outside diameter of round tubular pipe shall be not less than 25 mm and in the case of square section the side of the square shall be not less than 20 mm.

5.1.2 *Mild Steel Tubular Frame* — The mild steel tubular frame shall be made from tubular pipes with a wall thickness not less than 1·25 mm and outside diameter as 25 mm.

5.1.3 The frame shall be in one piece or may be jointed at one place by inserting a piece of tubular pipe in the joint with outer diameter equal to inside diameter of the tubular frame; then the joint shall be secured. At every change of direction, the tube shall be curved to the minimum radius possible without causing any cracks, unevenness or other defects in the bend. In the case of cantilever type of chairs bends where necessary shall be stiffened by inserting a piece of tubular pipe having outside diameter equal to the inside diameter of the tubular pipe used for frame.

5.2 Seat and Backrest — The seat and backrest shall be fabricated from a single piece of mild steel sheet not less than 1·0 mm thick or from aluminium sheet not less than 1·6 mm to form a comfortable fitting shape and there shall be no sharp exposed edges. The seat and backrest may also be padded, caned (*see* IS : 5378-1969*), fabricated out of mould plywood or moulded wood.

5.3 Armrest — Armrests shall be made from wood suitable for furniture conforming to IS : 399-1963†. Armrest may also be padded. These armrests shall be shaped to ensure comfort to the users. The armrests should be fixed to the tubular arms securely with screws from the under-side.

5.4 Studs — Studs for chairs shall be made either from rubber or suitable material.

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*Specification for polyethylene cane.

†Classification of commercial timbers and their zonal distribution (*revised*).

6. ASSEMBLY

6.1 The components shall be assembled by means of welding or bolting.

6.1.1 Welding of aluminium parts shall be in accordance with IS : 2812-1964*.

6.2 The method of gas, arc and spot welding shall conform to IS : 1323-1966†, IS : 816-1969‡ and IS : 819-1957§ respectively.

7. FINISH

7.1 Metal Components

7.1.1 All dents, burrs and sharp edges shall be removed from the various components. The components shall be individually pickled, scrubbed and rinsed to remove grease, rust, scale or any other foreign element.

7.1.2 Immediately after pickling, all the mild steel parts shall be given phosphating treatment conforming to Class C of IS : 3618-1966||. The process for application of phosphate coating shall be in accordance with IS : 6005-1970¶.

NOTE — Putty shall be applied to all the surfaces requiring filling and shall conform to IS : 110-1968**. Aluminium primer shall conform to IS : 5660-1970††.

7.1.3 Coat/coats of enamel paint shall then be applied as follows:

a) Finish coat with enamels conforming to IS : 151-1950‡‡, IS : 2932-1974§§ or IS : 2933-1975||||.

b) In case of stoving enamel the components shall thereafter be baked at a specified temperature in an oven heated uniformly. The finish shall be smooth and uniform with hard tough film of

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*Recommendations for manual tungsten inert-gas arc-welding of aluminium and aluminium alloys.

†Code of practice for oxy-acetylene welding for structural work in mild steel (*revised*).

‡Code of practice for use of metal arc welding for general construction in mild steel (*first revision*).

§Code of practice for resistance spot welding for light assemblies in mild steel.

||Specification for phosphate treatment of iron and steel for protection against corrosion.

¶Code of practice for phosphating of iron and steel.

**Specification for ready mixed paint, brushing, grey filler, for enamels, for use over primers (*first revision*).

††Specification for ready mixed paint, brushing, aluminium red oxide primer.

‡‡Specification for ready mixed paint, spraying, finishing, stoving enamel, for general purposes, colour as required.

§§Specification for enamel, synthetic, exterior (a) undercoating (b) finising (*first revision*).

||||Specification for enamel, exterior (a) undercoating (b) finishing (*first revision*).

enamel strongly adhering to the surface. The finish shall be free from all visible defects and shall not chip when tapped lightly *with a dull pointed instrument.*

7.2 Wooden Arms — The wooden arms shall be polished either with wax polish or a transparent glossy French polish, or stained dark and polished or lacquered as desired by the purchaser.

8. PERFORMANCE REQUIREMENTS OF FINISH

8.1 Scratch Hardness Test — A sample of mild steel plate 150 × 50 mm in size and thickness 0·315 mm and finished as described in **7** shall be subjected to scratch hardness test in accordance with **15.1** of IS : 101-1964*. A scratch, showing the bare metal, shall not be produced on the test sample.

8.2 Pressure Test — Samples prepared from mild steel plates of thickness 0·315 mm and finished as described in **7** shall be subjected to pressure test in accordance with **15.2** of IS : 101-1964*. The metal surface shall not be rendered visible when the test pieces are separated after the test.

8.3 Flexibility and Adhesion Test — A sample of mild steel plate 150 × 50 mm in size and thickness 0·315 mm and finished as described in **7** shall be subjected to flexibility and adhesion test in accordance with **16** of IS : 101-1964*. The paint film on the test piece shall not show damage, detachment or cracking when examined under ×10 magnification.

8.4 Stripping Test — A sample of mild steel plate 150 × 50 mm in size and thickness 0·315 mm and finished as described in **7** shall be subjected to stripping test in accordance with **17** of IS : 101-1964*. The scratch produced after the test shall be free from jagged edges.

8.5 Test for Protection Against Corrosion Under Conditions of Condensation — A mild steel panel of size 150 × 100 mm and thickness 1·25 mm and finished as described in **7** shall be subjected to test for protection against corrosion under conditions of condensation in accordance with **18** of IS : 101-1964*. The metal surface shall show no signs of corrosion after the test.

9. PACKING

9.1 All the component parts shall be packed in such a way that no damage is caused to them during transit.

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*Methods of test for ready mixed paints and enamels (*second revision*).

10. INFORMATION TO BE SUPPLIED BY THE PURCHASER

10.1 The purchaser shall supply the following information to the supplier along with the order:

a) Type required;
b) Colour and finish; and
c) Where alternative methods of construction and finish are specified, they shall be clearly stated in the order.

11. MARKING

11.1 All metal chairs shall be marked with suitable mark indentifying the manufacturer.

11.1.1 The metal chairs may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

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